

SAAM vs. SICAM WEG's Experience

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Outline

- History
- Methods
- Which method is more restrictive?
- Advantages and Disadvantages
- Trust Fund
- Recommendations

History

- October 31, 2001 – “Halloween Guidance”
- September 2002 – DEQ Stream Recommendations
- December 19, 2003 – Joint PN: SAAM
- Spring 2004 – SAAM Training: Initial Feedback Loop
- February 2005 – DEQ Advisory Workgroup
- April – June 2005 – SAAM Testing
- October 13, 2005 – PN: SAAM, effective November 15 (Piedmont only)
- October 24, 2005 – SICAM Draft
- November 2, 2005 – SAAM Public Meeting (JCC)
- December 29, 2005 – PN: SAAM/SICAM Retraction
- January 6, 2006 – SICAM Final
- March 3, 2006 – PN: SAAM – NW; SAAM/SICAM – SPGP (C)/IP/GP

Stream Conditions



Method needs to be flexible and applicable to many stream conditions

Method - Key Components

- Practical – consistent and repeatable
- Ecological – assign functional “value” and then provide compensatory mitigation
- Economical – provide incentives to the regulated community

Main Question

Which is more restrictive?
SAAM or SICAM

SAAM

- Six (6) Attributes, Score each CI (0-1), Total = 6
- Form 1: Determine Stream “Value”
 - Channel Incision, Riparian Areas, Bank Stability, Instream Habitat, Sediment Deposition, and Channel Alteration
- Form 2: Determine “Lift” RCI
- Form 3: Compute Mitigation
 - Preservation: $RCI_i / RCI_m * LF_i * \text{Ratio} = \text{LF req'd}$
 - Other: $RCI_i / RCI_{\text{lift}} * LF_i = \text{LF req'd}$

SICAM

- Form 1: Four (4) metrics: Channel Condition, Riparian Buffer, Instream Habitat, and Channel Alteration... RCI (0-7)
- Form 2: Compensation Requirement (CR)
 - $CR = LF * SQF$
- Form 3: Credit Determination Worksheet
 - $CC = LF / \text{Ratio}$
 - Ratios based on restoration/enhancement level/preservation
- Form 4: Compensation Summary Worksheet

Fundamental Issues

1. Assessments – stream “value” computed differently
 - SAAM – 6 attributes
 - SICAM – 4 metrics
2. Mitigation – computed differently
 - SAAM – “lift” concept
 - SICAM – SQF & Ratios
3. No link between SAAM Lift and SICAM
(Enhancement I/II and Restoration) activities

Critical Differences

- Buffer Widths
 - SAAM – up to 200' (25-100% credit increase depending on “net lift”)
 - SICAM – up to 300' (30% increase for 300')
- One-sided streams
 - SAAM = $0.5/6 = 8\%$ decrease in net lift
 - SICAM = 5:1 to 10:1 = 50% decrease in credit
- Watershed Restrictions
 - SAAM = 67% increase in credit (5:1 to 3:1)
 - SICAM = 40% increase in credit ($A_f = 0.4$)

Critical Differences, cont.

- Urban / Community Related Constraints
 - SAAM = n/a
 - SICAM = 50% increase
- Sensitivity of Attributes/Metrics
 - SAAM – 1/6 or 12.5%
 - SICAM – varies, depending on metric

Site-Specific Examples

- Preservation Only; no adjustment factors

1. Michelle Point: 465 LF Impact (RCI = 3.41)

SAAM = 1,510 LF Preservation (RCI = 5.25): Net = 3.2:1

SICAM = 3,135 LF Preservation (RCI = 5.25): Net = 6.7:1

2. Premier Properties = 136 LF Impact (RCI = 4.81)

SAAM = 623 LF Preservation (RCI = 5.25): Net = 4.6:1

SICAM = 885 LF Preservation (RCI = 5.25): Net = 6.5:1

**Conclusions: SICAM is more restrictive;
Greater ecological protection (stream and buffer)**



PP: Impact Area



Mitigation Area

Mitigation Bank Example

Example*: SICAM CR = 767 credits; SAAM = 3,329 SCUs

*Values based on composite preservation/restoration/enhancement activities

Lowest Quality Stream Impact

SICAM (SQF = 0.25) vs. SAAM (RCI = 0.03)

SICAM = $767 / 0.25 = 3,068$ LF of impact mitigated by Example

SAAM = $3,329 / 0.03 = 110,967$ LF of impact mitigated by Example

Highest Quality Stream Impact

SICAM (RCI = 7.0, SQF = 1.6) vs. SAAM (RCI = 6.0)

SICAM = $767 / 1.6 = 479$ LF of impact mitigated by Example

SAAM = $3,329 / 6.0 = 555$ LF of impact mitigated by Example

Conclusion: SICAM is more restrictive

SAAM & SICAM

Advantages and Disadvantages

SAAM - Assessment

Advantages

1. Considers watershed/stormwater inputs directly
2. Field-tested by private- and public-sector (limited)

Disadvantages

1. Developed for Piedmont Region only; being applied state-wide
2. Bankfull measurement – difficult, even in “reference” streams
3. Form 2 – “negative lift” if you apply by letter of the law (i.e. watershed position)
4. Applicability to Banks... requires conversion to TSCUs... another currency and not included in PN

SAAM - Mitigation

Advantages

1. Procedure straight forward for site-specific projects
2. Less mitigation required as compared to SICAM

Disadvantages

1. No individual attribute weighting (i.e. all metrics equal)
2. No buffer weighting – seaward vs. landward
3. No basis for determining compensation (i.e. lift concept)
4. Buffer Adjustment Factor – max. width is 200 ft
5. Tends to lump into Marginal RCI
6. More time and money... uncertain on amount of stream resource required for mitigation during search

SICAM - Assessment

Advantages

1. Formed basis of Corps and DEQ approved SIAM
Note: SIAM is not discussed, but it does complicate the issue when a separate method was approved during the current PN.
2. Includes “impact factors” – incentive to applicant
3. Applicable to site-specific and Bank projects – single currency

Disadvantages

1. Habitat – not enough precision; lumps results
2. Alteration – does not account for livestock degradation

SICAM - Mitigation

Advantages

1. Weights metrics (i.e. channel condition)
2. Credit for increased buffer widths (> 200')
3. Less time and money to evaluate... amount known upfront (i.e. watershed approach)

Disadvantages

1. Tends to lump into Suboptimal SQF
2. RCI Flow Chart Options
 - $S = 1/240$; $P = 13/240$; $M = 101/240$; $SO = 107/240$ (44.6%); $O = 17/240$; $E = 1/240$
3. Compensation much higher; especially on preservation side of the equation...**Note: Is this a bad thing?**

Repeatability?



Prince William Forest

- BHR = 1.00-3.33
- Riparian = 0.80-1.00
- Erosion = 0.40-0.90
- Habitat = 0.15-1.00
- Sediment = 0.05-0.95
- Alteration = 0.10-1.00



Powhatan Plantation

- Bankfull?
- Coastal Plain
- Alteration

Applicability (?)



Madison County

- Habitat
- Channel Alteration
- River Corridors



Common Threads

1. Applicability to small, headwater streams (?)
2. Methods tend to lump: SAAM (Marginal); SICAM (Suboptimal)
3. Channel Alteration
 - problematic
 - function vs. hardening: riprap
4. Programmatic Issues –
 - a) Inconsistency – Trust Fund and individual projects
 - a) Equitability – timeframes and mandates for ongoing projects
 - a) Training



Economics

1. Both methods have significant financial impacts when compared to previous, shotgun mitigation approaches
2. How much is too much?
 - a) Wider buffers
 - b) Watershed protection
 - c) Letter vs. spirit of the methodology

Jefferson Commons

Jefferson Commons – Newport News

Impacts = 686 LF

Note: All values estimated

SAAM

$$RCI_{\text{impact}} = 3.80$$

$$RCI_{\text{pre}} = 1.74$$

$$RCI_{\text{post}} = 4.98$$

$$\text{Lift} = 3.24$$

$$\text{Mitigation} = 3.8/3.24 * 686 = 805 \text{ LF}$$

SICAM

[so – o – p – n*]

$$RCI = 5.0 = \text{Optimal (SQF} = 1.5)$$

$$CR = 686 * 1.5 = 1,029 \text{ Credits}$$

Impact Photos



Jefferson Commons

Lucas Creek:

SAAM = 805 LF

SICAM = 1,029 Credits*

Mitigation Cost = \$175/LF

Actual = \$120,050 [\$175/LF]

SAAM = \$140,875 [\$205/LF]

SICAM = \$180,075 [\$262/LF]

- Notes:
- 1) stormwater
 - 2) impact scenario – e/i
 - 3) watershed position



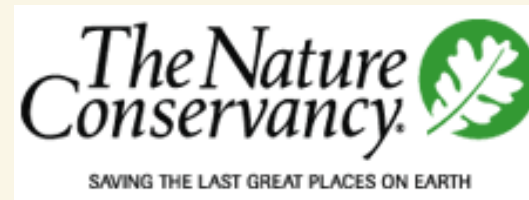
Project Penalty / Incentives

Albemarle Project

- Original Impacts = 1,650 LF
- Avoidance and Minimization Completed
- Pursue Mitigation Options
- Cost/LF (Bank) = \$300/LF...SICAM CR = increased to \$400/LF due to SQF
- Question: Do you spend money on mitigation or sharpen pencil?
- Impacts decreased from 1,650 to 571 LF
- Result: Fewer impacts / Less mitigation

Virginia Aquatic Resources Trust Fund

2005 Annual Report



Trust Fund - Streams

1. Good to see that projects are in motion; however,
2. Assessment
 - a) Example: 25 LF impact...SICAM CR = 30
 1. Bank: $30 \times \$300 = \$9,000$
 2. TF: SAAM, $25 \times \$221 = \$5,525$39% savings

Who/what benefits?
3. Debiting
 - a) Needs to follow suit with private-sector debiting system

Reality: Inconsistent; unknown, and ever-changing

Bottom Line: Needs to be consistent, based on market value (bank or no bank), and reflect approved method

Trust Fund - Wetlands

1. Consistency - Standard Ratios
2. Mitigation Ratios
 - a) Preservation
 - TF = 5:1; Regulated Public (RP) = 10:1
 - b) Upland Buffer Establishment
 - TF = 2.5:1; RP = 15:1
 - c) Upland Buffer Preservation
 - TF = 7.5:1, RP = 20:1

Bottom Line: 1) Inconsistent, 2) Based on market value - bank or no bank, and 3) Reflect the approved “Method”

Review Points

- Practical (ease of implementation)
- Ecological (functional value and compensation)
- Economical (feasible or unfeasible?)
- What is our baseline (VA vs. NC)
- Does the method provide incentives/penalties?

Recommendations

1. Implement SICAM (all permits) with modifications
 - a) Habitat – add additional category
 - poor, marginal, suboptimal, optimal
 - b) Alteration – include livestock degradation
 - c) SQF's – adjustment considerations

Existing

Severe: 1.0

Poor: 1.1

Marginal: 1.2

Suboptimal: 1.3

Optimal: 1.5

Exceptional: 1.6

Potential

Severe: 1.0

Poor: 1.05

Marginal: 1.1

Suboptimal: 1.2

Optimal: 1.5

Exceptional: 1.6

Sharpens thresholds and provides incentives!

Recommendations, cont.

2. Modify RCI Flowchart
3. Develop link between SICAM and SIAM
 - a) Urban/CRR
 - b) D.A.
 - c) Other metrics...
4. Reduce mandatory 100-foot buffers – 50' & utilize slope conditions
5. Eliminate Trust Fund methodology
6. **Let's get on with it!**

Questions / Comments?

